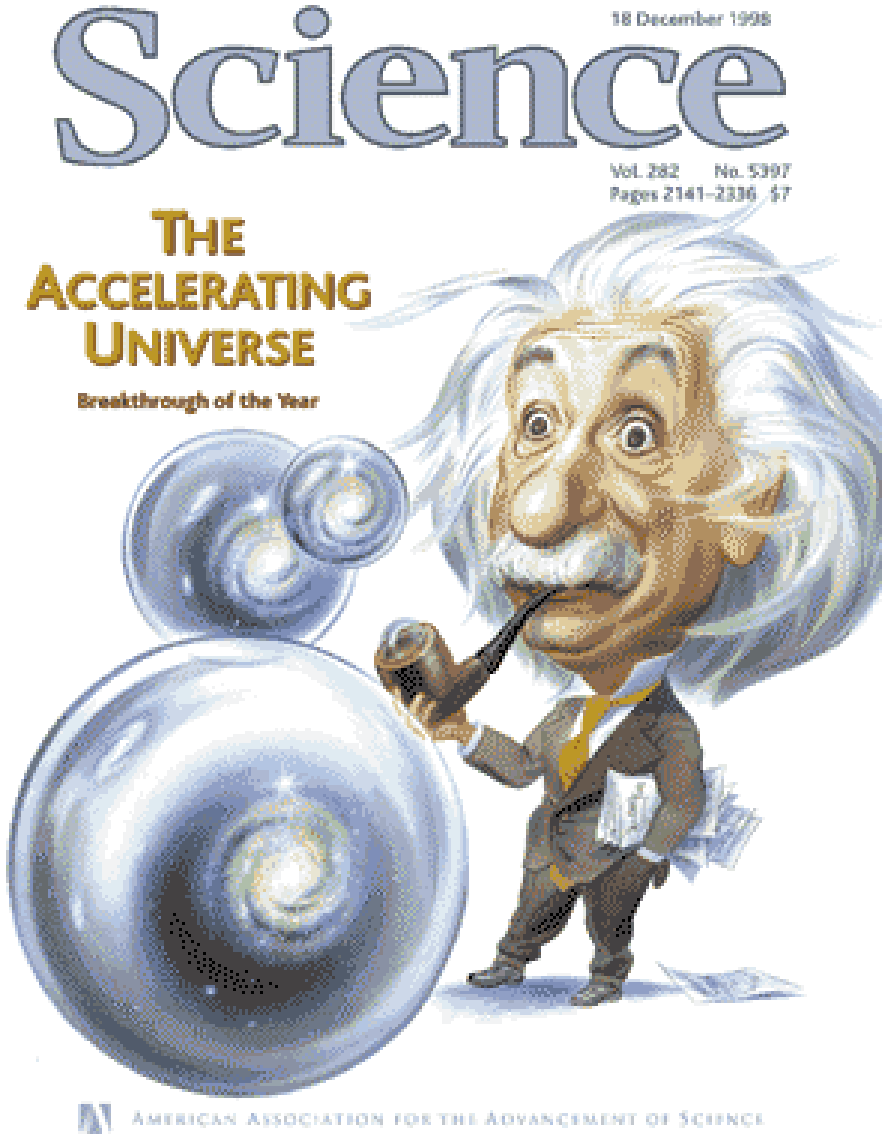
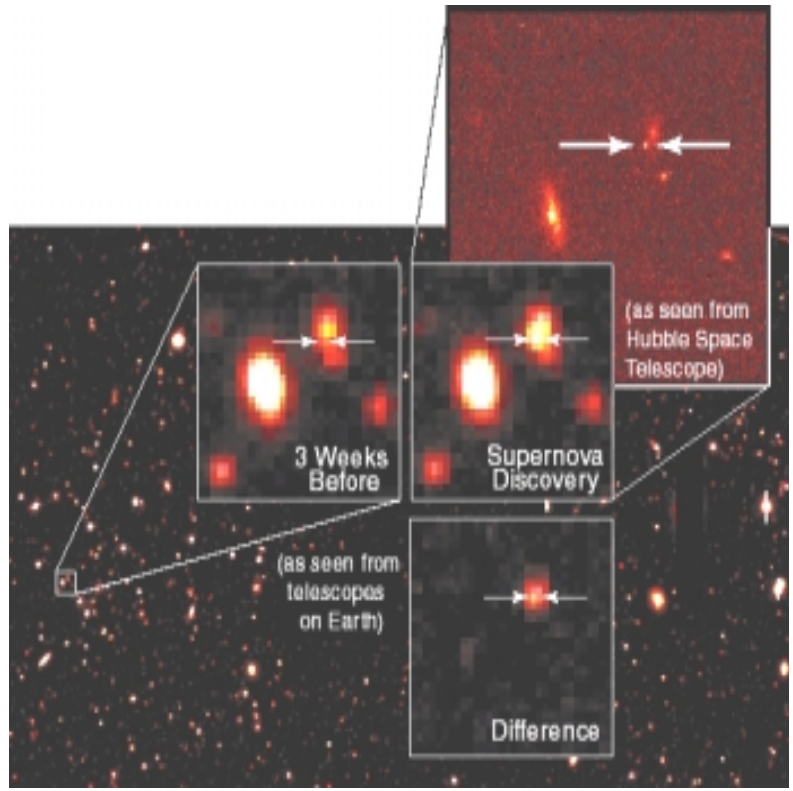
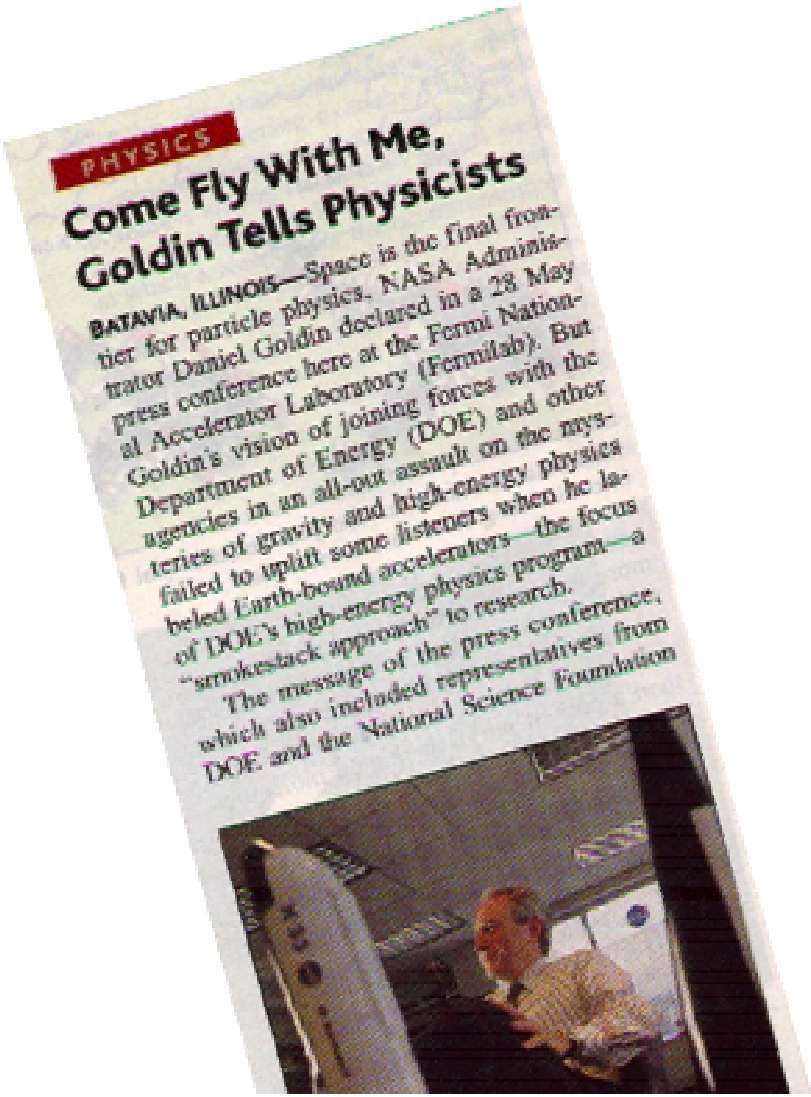
Astrophysics to Understand the Universe

Mass Density, Vacuum Energy Density, and Curvature





NASA Interest in New Astrophysics Probes



PHYSICS

Come Fly With Me, Goldin Tells Physicists

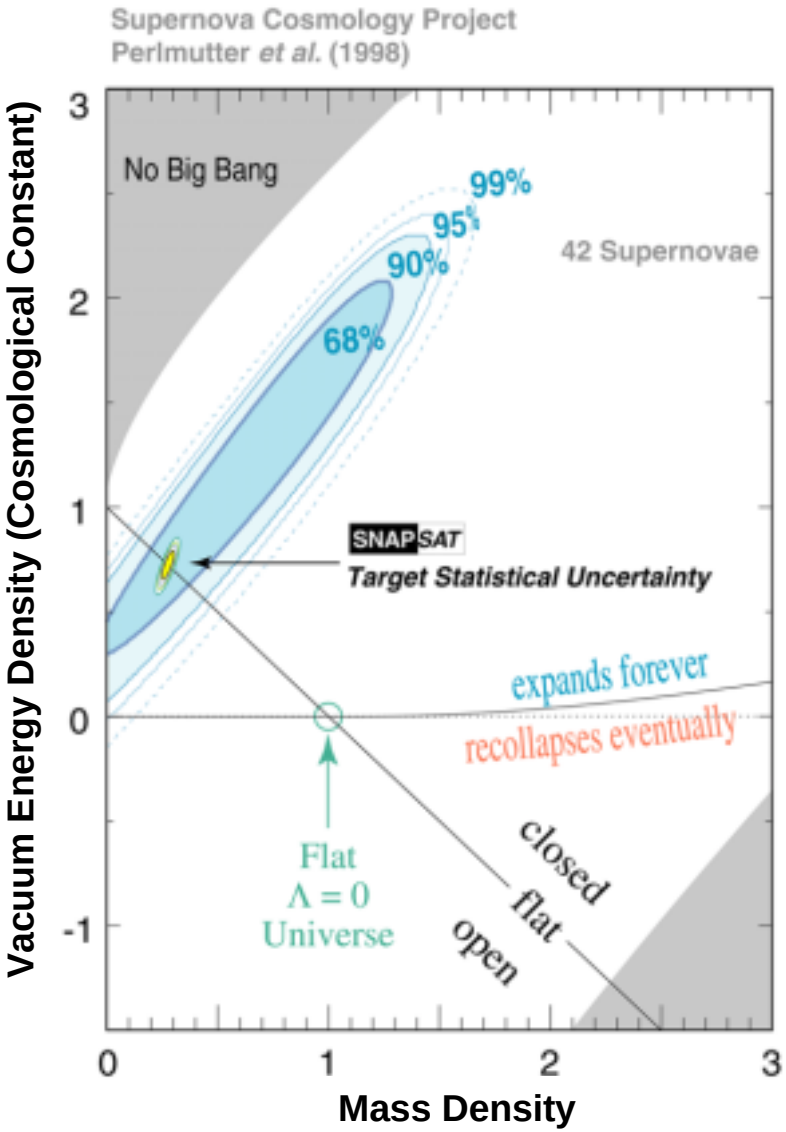
BATAVIA, ILLINOIS—Space is the final frontier for particle physics, NASA Administrator Daniel Goldin declared in a 28 May press conference here at the Fermi National Accelerator Laboratory (Fermilab). But Goldin's vision of joining forces with the Department of Energy (DOE) and other agencies in an all-out assault on the mysteries of gravity and high-energy physics failed to uplift some listeners when he labeled Earth-bound accelerators—the focus of DOE's high-energy physics program—a "smokestack approach" to research.

The message of the press conference, which also included representatives from DOE and the National Science Foundation

"... in the quest to quantify the expansion of the Universe, astronomers may have uncovered a new physical phenomenon -- a kind of vacuum energy they call the Cosmological Constant. This exciting discovery may have given astronomers and physicists an unexpected clue about fundamental physics."

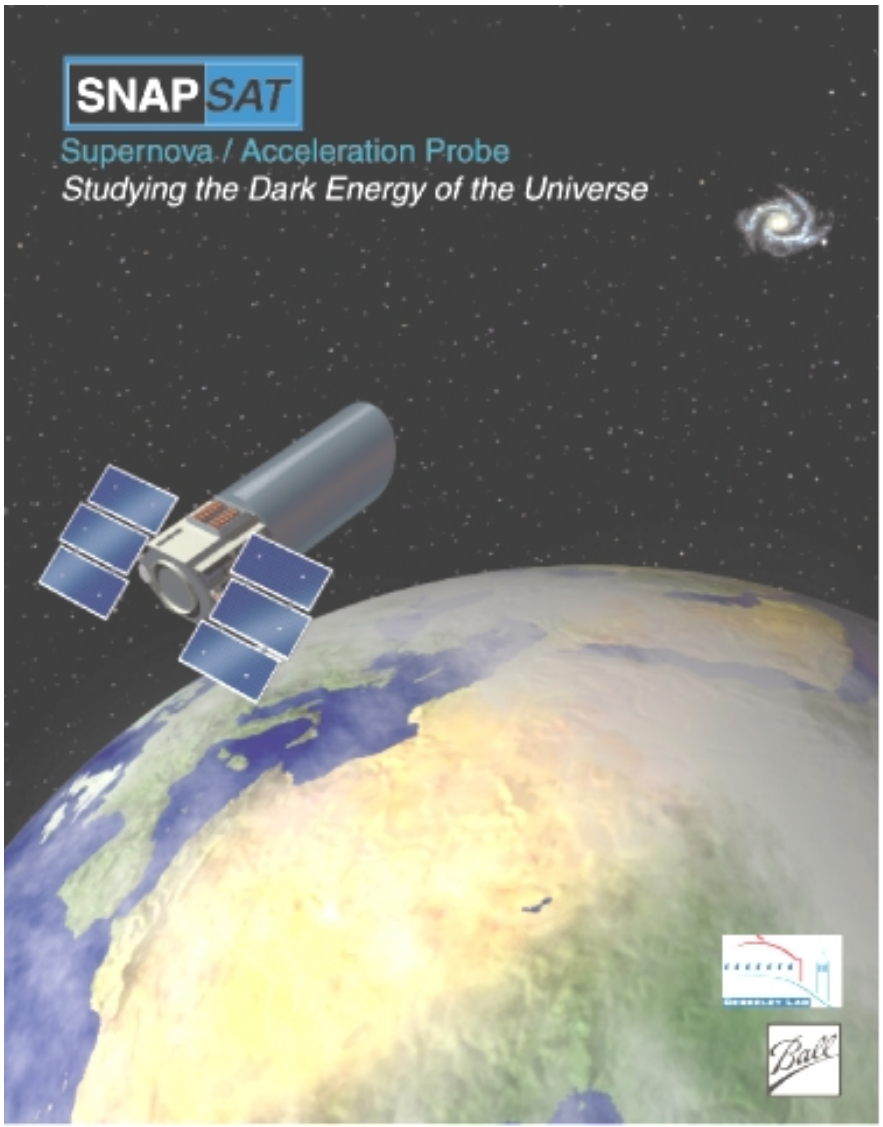
Daniel S. Goldin, May 28, 1999
Fermilab Inner Space-Outer Space Conference

Proposed Satellite Probe of the Fundamental Properties of the Universe



Scientific Goal	Level of Certainty
• Mass/vacuum energy	99%
• Curvature	95%
• Mass density	98%
• Vacuum energy	95%
• Equation of state for dark energy	95%

Proposed Satellite Probe of the Fundamental Properties of the Universe



Scope

- 1.8 meter aperture
- 1 square degree mosaic camera (1 billion pixels)
- 3 channel spectroscopy 0.3 μm-1.8 μm